

REMARKS

Claims 2, 7 and 8 are now pending in the application. Claims 1 and 3-6 are withdrawn and claims 7 and 8 are added to the present application. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 112

Claim 2 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicant regards as the invention. This rejection is respectfully traversed.

Claim 2 has been amended to address the Examiner's concern. Support for these amendments can be found, for example, in a branching fiber coupler 42, a coupler 43, an EDF (erbium-doped fiber) 45, and a circulator 47 shown in FIG. 3 of the present application. Applicant believes that all pending claims particularly point out and distinctly claim the subject matter of the present invention. Therefore, reconsideration and withdrawal of this rejection is respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claim 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Masayuki et al. (Japanese Patent Pub. No. 05-129685) in view of Kawakami (U.S. Pat. No. 6,263,139). This rejection is respectfully traversed.

First, Claim 2 recites that the signal light has a wavelength in a wavelength band of 1570 nm to 1600 nm, that is, and L-band. In contrast, Masayuki merely discloses signal light having a wavelength λ 2 of 1.55 μm , i.e., 1550 nm (paragraph [0014]). Similarly, Kawakami merely discloses signal light of wavelength 1.5 μm , i.e. 1500 nm (column 4, line 40 and column 6, line 8).

Second, Applicant's invention has been made in view of the problem such as explained on page 4, last paragraph of the specification. In short, reduction in pumping efficiency and increase in a noise figure of EDFs is crucial especially when signal light of the L band is used. Accordingly, a branch branches pumping light divided by a divider, with a branching ratio of 33% to 67% and outputs a first pumping light beam which is 33% of the pumping light and a second pumping light beam which is 67% of the pumping light. As a result, an optimum branching ratio is set that conforms to the pumping efficiency and a noise property, thereby making it possible to improve the pumping efficiency and to reduce the noise. Pending claims have been amended to further define this aspect of the invention. Support for the amendments can be found, for example, on page 4, line 9-11 (i.e. "in the case where the gain wavelength region is set to L band (1570 nm to 1600 nm) of EDFA in the signal light") and page 9, lines 17-19 (i.e., "this invention is of great value in the case where the gain wavelength region of the signal light is set to the L band of EDFA") of the specification. Additional support is also found, for example, on FIG. 3 and page 13, last paragraph to page 14, first paragraph of the specification.

In contrast, Masayuki does not mention the branching ratio of an optical branch shown in FIG. 2. Moreover, Masayuki merely suggests that the branching ratios of pumping light ("excitation light" in the enclosed computer translation of Masayuki) of a second optical coupler 22 shown in FIG. 3 and a fourth optical fiber coupler 122 shown in FIG. 5 are both 50% to 50% (paragraphs [0016] and [0019]). Please note that as can be understood from the description of paragraph [0019] and the flow of optical signals of wavelengths λ_1 and λ_2 shown in FIG. 5, reference symbols 121, 121a-121d, 122 and 122a-122d shown in FIG. 5 of Masayuki should read reference symbols 122, 122a-122d, 121, and 121a-121d, respectively. Thus, in the specification of Masayuki such as paragraphs [0018] and [0019], the fourth optical fiber coupler 122 shown in FIG. 5 is explained as a third optical fiber coupler 121.

Kawakami does not even disclose a branch that supplies pumping light beams from both sides of an erbium-doped fiber. As such, neither Masayuki nor Kawakami is aware of setting the optimum branching ration of a branch that can resolve the foregoing problem due to the use of signal light of the L band. Therefore, it is respectfully submitted that Claim 2 defines patentable subject matter over this combination of references.

Moreover, Masayuki is merely directed to an optical multiplexer/demultiplexer and an optical fiber amplifier. Thus, Masayuki teaches away from combining with Kawakami which is directed to a remote pumping system. One having ordinary skill in the art would not have been motivated to combine Kawakami with Masayuki. For this additional reason, it is respectfully submitted that Claim 2 defines patentable subject matter over this combination of references. Accordingly, Applicant respectfully requests reconsideration and withdrawal of this rejection.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

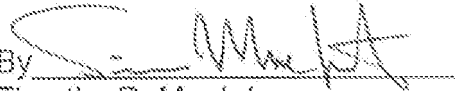
Application No. 10/552,554
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Docket No.: 5259-000058/US/NP

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 08-0750, under Order No. 5259-000058/US/NP from which the undersigned is authorized to draw.

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Respectfully submitted,

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